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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,530

03/29/2004

Volker Harle

P2001,0678

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08/08/2007

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EXAMINER

LUU, CHUONG A

ART UNIT

PAPER NUMBER

2818

MAIL DATE

DELIVERY MODE

08/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/813,530

Applicant(s)

HARLE ET AL.

Examiner

Chuong A. Luu

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/23/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-25 is/are rejected.
- 7) ☒ Claim(s) 8-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION
PRIOR ART REJECTIONS

Statutory Basis

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The Rejections

Claims 1-3, 5, 7, 12, 15-16, 22-23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Shakuda (U.S. 5,838,029).

Shakuda discloses a light emitting device with

(1) providing a semiconductor body containing a substrate (21) and at least one nitride compound semiconductor disposed on the substrate (21) (see Figure 1b);

applying a metal layer to a surface of the semiconductor body (see Figure 1b);

dry-chemically removing a part of the metal layer and a part of the semiconductor body previously covered by the removed metal layer (see column 2, lines 8-10. Figures 1c-1f);

(2) which further comprises forming the nitride compound semiconductor as a compound having a formula $Al_yIn_xGa_{1-x-y}N$, $0 < x < 1$, $0 < y < 1$, $0 < x + y < 1$ (see column 1, lines 21-65);

(3) wherein the dry-chemically removing step is preformed by the steps of:
forming a mask on the metal layer, a part of the metal layer not being covered by the mask (see column 2, lines 8-10);

removing that part of the metal layer which is not covered by the mask, a part of the surface of the semiconductor body thereby being uncovered and defining an uncovered surface (see Figures 1c-1f);

partially removing the semiconductor body in regions of the uncovered surface;
and removing the mask (see Figures 1c-1f);

(5) which further comprises fabricating the mask photolithographically, in which a photoresist mask is fabricated on the mask (see Figures 1c-1f);

(7) which further comprises removing the part of the semiconductor body by an etching method (see Figures 1c-1f);

(12) which further comprises applying a contact metallization (see Figures 1c-1f);

(15) which further comprises forming the semiconductor body to be p-doped in a region adjoining the metal layer (see column 1, lines 60-65);

(16) which further comprises doping the p-doped region of the semiconductor body with a material selected from the group consisting of magnesium and ZnC (see column 1, lines 60-65);

(22) which further comprises forming the substrate to be n-conducting (see column 5, lines 25-55 and column 6, lines 23-38);

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(23) which further comprises forming the substrate to be selected from the group consisting of n-doped SiC and n-doped GaN (see column 5, lines 25-55 and column 6, lines 23-38);

(25) which further comprises removing the metal layer by an etching method (see column 7, lines 51-52).

PRIOR ART REJECTIONS

Statutory Basis

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The Rejections

Claims 4, 6, 13-14, 17-21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shakuda (U.S. 5,838,029) in view of Uemura et al. (U.S. 7,096,873).

Shakuda teaches the above outlined features except for selecting silicon oxide as masking layer; applying sputtering back to remove metal layer, which is platinum and palladium and the thickness of the metal layer. However, Uemura discloses a semiconductor device with (13) which further comprises forming the metal layer to contain a material selected from the group consisting of platinum and palladium (see

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column 4, lines 50-51); **(17)** which further comprises forming the semiconductor body with a radiation-generating active layer (see column 6, lines 60-65); **(18)** wherein a semiconductor ridge structure is shaped by the partially removing of the semiconductor body step (see column 3, lines 55-65); **(19)** wherein the semiconductor ridge structure forms a waveguide at least for parts of radiation generated by the active layer (see column 3, lines 55-65); **(20)** wherein the semiconductor component a luminescence diode (see column 4, lines 10-13); **(21)** wherein the luminescence diode is selected from the group consisting of light-emitting diodes, laser diodes, and laser diodes with a ridge waveguide (see column 4, lines 10-13). Even through, Shakuda and Uemura do not explicitly describe the thickness of the metal layer. However, the thickness of the metal layer is considered to be obvious. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of Shakuda (accordance with the teaching of Uemura) since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, and it also has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art and it is noted that the applicant does not disclose criticality in the ranges claimed. In re Leshin, 125 USPQ 416 and In re Aller, 105 USPQ 233 (see MPEP 2144.05). Doing so would facilitate the manufacture of the semiconductor device and increase the performance of the semiconductor structure.

Allowable Subject Matter

Claims 8-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed May 23, 2007 have been fully considered but they are not persuasive. Applicant argues that nowhere does Shakuda describe that a metal layer is subjected to such dry etching. This assertion is respectfully traversed. Shakuda discloses that the metal layer, which is contained an alloy of Al and In (see column 1, lines 55-59 and column 2, lines 8-9).

In view of the foregoing, it is believed that the rejections of claims 1-7 and 12-25 under 35 USC 102 and 103 are proper.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuong A. Luu whose telephone number is (571) 272-1902. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven H. Loke can be reached on (571) 272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Chuong Anh Luu
Patent Examiner
August 2, 2007